



STUDI ANALISIS KUALITATIF SPESIES BESI OKSIDA DALAM HUMIN SINTETIS

Yuna Mustika Aji Dewi
11/317099/PA/14216

INTISARI

Telah dilakukan analisis kualitatif spesies besi oksida dalam humin sintetis. Humin sintetis diekstrak dari humus sintetis berdasarkan metode IHSS (International Humic Substance Society), kemudian besi oksida diidentifikasi dengan FTIR, XRD, dan TEM. Konsentrasi Fe total yang terdapat dalam humin sintetis diukur dengan SSA.

Ekstraksi fraksi humin sintetis diperoleh sebesar 68,9%. Spektra FTIR menunjukkan adanya serapan vibrasi ulur O–H, vibrasi ulur N–H, vibrasi ulur C–H, vibrasi ulur C=C aromatik, vibrasi ulur C–O, dan vibrasi tekuk Fe–O. Puncak difraksi sinar-X yang menunjukkan adanya spesies besi oksida maghemit dan magnetit dengan intensitas tertinggi ditunjukkan pada d_{311} (15,4 nm). Citra TEM humin sintetis menunjukkan adanya spesies besi oksida berupa partikel bulatan yang tersebar di permukaan dengan ukuran $\pm 18,3$ nm. Data XRD dan TEM membuktikan bahwa humus sintetis mengandung komponen besi oksida. Konsentrasi Fe total pada humin sintetis diperoleh sebesar 0,03%. Kadar Fe di dalam humin sintetis berada dibawah batas maksimum Permentan No. 02/Pert./HK.060/2/2006 sehingga pemberian humus sintetis aman digunakan tanaman.

Kata kunci : humin sintetis, besi oksida, superparamagnetik.



STUDY ON QUALITATIVE ANALYSIS IRON OXIDES SPECIES IN SYNTHETIC HUMIN

Yuna Mustika Aji Dewi

11/317099/PA/14216

ABSTRACT

A study on qualitative analysis of species iron oxides in the synthetic humin has been carried out. Synthetic humin was extracted by using IHSS (International Humic Substance Society) method from synthetic humus, and iron oxides were characterized using FTIR, XRD, and TEM. The concentration of Fe in synthetic humin was determined by using AAS.

The result showed that synthetic humin was obtained at 68.9%. FTIR spectra show the presence of absorption peaks of O–H, N–H, C–H, C=C aromatic, C–O stretching, and Fe–O bonding. XRD showed the peak of iron oxides for maghemite and magnetite with highest intensity at d_{311} (15.4 nm). TEM image of synthetic humin shows particles spread over the surface from iron oxide was \pm 18.3 nm. XRD and TEM data prove that synthetic humus contains iron oxides component. The concentration of Fe in synthetic humin is 0.03%. This concentration was below the maximum limit of Permentan No. 02/Pert./HK.060/2/2006 so the application of synthetic humus is safe for the plants.

Keywords: synthetic humin, iron oxide, superparamagnetic.